IN THE CLAIMS

1-49 (cancelled)

50. (previously presented) A computer implemented method of analyzing an orthodontic treatment comprising:

storing the original positions of a patient's teeth in memory;

storing the desired final positions of the patient's teeth in the memory;

performing a finite element analysis based on the orthodontic treatment and a movement of the patient's teeth between only the stored original and final positions; and,

providing a computer generated output that is based on the finite element analysis.

51. (previously presented) The computer implemented method of claim 50 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the final positions to the original positions.

52. (previously presented) The computer implemented method of claim 50 wherein the orthodontic treatment is based upon a set of orthodontic appliances to be applied to the patient's teeth, and wherein the performing of the finite element analysis comprises performing the finite element analysis based upon the set of orthodontic appliances and the movement of the patient's teeth between the original and final positions.

53. (previously presented) The computer implemented method of claim 52 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the final positions to the original positions.

54. (previously presented) The computer implemented method of claim 50 wherein the performing of the finite element analysis comprises:

determining position vectors for each of the patient's teeth between the original and final positions; and,

performing the finite element analysis based on the orthodontic treatment and a movement of the patient's teeth along the position vectors.

55. (previously presented) The computer implemented method of claim 54 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the final positions to the original positions.

56. (previously presented) The computer implemented method of claim 54 wherein the orthodontic treatment is based upon a set of orthodontic appliances to be applied to the patient's teeth, and wherein the performing of the finite element analysis comprises performing the finite element analysis based upon the set of orthodontic appliances and the movement of the patient's teeth between the original and final positions.

57. (previously presented) The computer implemented method of claim 56 wherein the performing of the finite element analysis comprises performing the

finite element analysis based on a movement of the patient's teeth from the final positions to the original positions.

58. (previously presented) The computer implemented method of claim 50 wherein the performing of the finite element analysis comprises:

storing material properties of the patient's teeth, PDL, and bone and of the proposed orthodontic treatment; and,

performing the finite element analysis based on the orthodontic treatment, the stored material properties, and a movement of the patient's teeth between the original and final positions.

59. (previously presented) The computer implemented method of claim 50 wherein the providing of a computer generated output based on the finite element analysis comprises displaying information relating to the effectiveness of the orthodontic treatment.

60. (previously presented) A computer implemented method of analyzing an orthodontic treatment comprising:

storing first positions of a patient's teeth in memory;

storing second positions of the patient's teeth in the memory, wherein the second positions comprise desired positions relative to the first positions;

performing a finite element analysis to determine orthodontic effects of the orthodontic treatment, wherein the finite element analysis is performed based on (i) contact pairs between orthodontic appliances, and (ii) a movement of the patient's teeth between the first and second positions; and,

providing an output based on the orthodontic effects.

61. (previously presented) The computer implemented method of claim 60 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the second positions to the first positions.

62. (previously presented) The computer implemented method of claim 60 wherein the performing of the finite element analysis comprises:

determining position vectors for each of the patient's teeth between the first and second positions; and,

performing the finite element analysis based on the orthodontic treatment and a movement of the patient's teeth along the position vectors.

63. (previously presented) The computer implemented method of claim 62 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the second positions to the first positions.

64. (previously presented) The computer implemented method of claim 60 wherein the first positions of the patient's teeth are original positions, and wherein the second positions of the patient's teeth are final positions.

65. (previously presented) The computer implemented method of claim 64 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the final positions to the original positions.

66. (previously presented) The computer implemented method of claim 60 wherein the first positions of the patient's teeth are intermediate positions, and wherein the second positions of the patient's teeth are final positions.

67. (previously presented) The computer implemented method of claim 66 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the final positions to the intermediate positions.

68. (previously presented) The computer implemented method of claim 60 wherein the performing of the finite element analysis comprises:

storing material properties of the patient's teeth, PDL, and bone and of at least some of the appliances to be used during the proposed orthodontic treatment; and,

performing the finite element analysis based on the orthodontic treatment, the stored material properties, and a movement of the patient's teeth between the first and second positions.

69. (previously presented) The computer implemented method of claim 60 wherein the providing of an output based on the orthodontic effects comprises displaying the orthodontic effects.

70. (previously presented) A computer implemented method of determining an effective orthodontic treatment comprising:

a) storing in memory a first model based upon first positions of a patient's teeth;

b) storing in the memory a second model based upon second positions of the patient's teeth, wherein the second positions represent desired positions of the patient's teeth relative to the first positions of the patient's teeth;

c) storing in the memory a proposed subset of orthodontic appliances from a set of pre-existing orthodontic appliances according to a proposed orthodontic treatment;

d) performing a finite element analysis based on the proposed orthodontic treatment and a movement of the patient's teeth between the first and second positions so as to generate information regarding the effectiveness of the proposed orthodontic treatment;

e) displaying the information;

f) storing in the memory a new subset of orthodontic appliances from the set of pre-existing orthodontic appliances if the finite element analysis indicates that the proposed orthodontic treatment produces undesired effects; and,

g) repeating d) - f) as necessary until the effective orthodontic treatment is achieved.

71. (previously presented) The computer implemented method of claim 70 wherein the undesired effects include stresses and/or strains outside of a desired range.

72. (previously presented) The computer implemented method of claim 70 wherein the undesired effects include stresses and/or strains above or below an acceptable limit.

73. (previously presented) The computer implemented method of claim 70 wherein the performing of the finite element analysis comprises performing the finite element analysis based on the stored first and second models.

74. (previously presented) The computer implemented method of claim 70 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the second positions to the first positions.

75. (previously presented) The computer implemented method of claim 70 wherein the performing of the finite element analysis comprises performing the finite element analysis in two stages, wherein the first stage determines wire deformation of archwires, and wherein the second stage determines stresses, strains, forces, and /or moments as a result of the wire deformation.

76. (previously presented) The computer implemented method of claim 70 wherein the performing of the finite element analysis comprises:

determining position vectors for each of the patient's teeth between the first and second positions; and,

performing the finite element analysis based on the orthodontic treatment and a movement of the patient's teeth along the position vectors.

77. (previously presented) The computer implemented method of claim 70 further comprising displaying the first model.

78. (previously presented) The computer implemented method of claim 77 wherein storing in the memory of a proposed subset of orthodontic appliances from a set of pre-existing orthodontic appliances comprises selecting the proposed subset of orthodontic appliances based on the displayed first model.

79. (previously presented) The computer implemented method of claim 70 wherein the storing in the memory of a proposed subset of orthodontic appliances from a set of pre-existing orthodontic appliances comprises installing the proposed subset of orthodontic appliances on the second model.

80. (previously presented) The computer implemented method of claim 79 further comprising displaying the installed subset of orthodontic appliances on the second model.

81. (previously presented) The computer implemented method of claim 79 further comprising displaying the first model.

82. (previously presented) The computer implemented method of claim 81 wherein the storing in the memory of a proposed subset of orthodontic appliances from a set of pre-existing orthodontic appliances comprises selecting the proposed subset of orthodontic appliances based on the displayed first model.

83. (previously presented) The computer implemented method of claim 79 wherein the performing of the finite element analysis comprises performing the finite element analysis in two stages, wherein the first stage determines wire deformation of archwires, and wherein the second stage determines stresses, strains, forces, and /or moments on the proposed set of orthodontic appliances as a result of the wire deformation.

84. (previously presented) The computer implemented method of claim 70 wherein the first positions of the patient's teeth are original positions, and wherein the second positions of the patient's teeth are final positions.

85. (previously presented) The computer implemented method of claim 84 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the final positions to the original positions.

86. (previously presented) The computer implemented method of claim 70 wherein the first positions of the patient's teeth are intermediate positions, and wherein the second positions of the patient's teeth are final positions.

87. (previously presented) The computer implemented method of claim 86 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the final positions to the intermediate positions.

88. (previously presented) The computer implemented method of claim 70 wherein the performing of the finite element analysis comprises:

storing in the memory material properties of the patient's teeth, PDL, and bone and of the proposed orthodontic treatment; and,

performing the finite element analysis based on the proposed orthodontic treatment, the stored material properties, and a movement of the patient's teeth between the first and second positions.

89. (previously presented) A computer readable storage medium having program code stored thereon which, when executed by a computer, performs the following tasks:

a) storing a first position model of a patient's teeth, wherein the first position model represents first positions of the patient's teeth;

b) storing a second position model of the patient's teeth, wherein the second position model represents second positions of the patient's teeth, and wherein the second positions comprise desired positions relative to the first positions;

c) storing a set of orthodontic appliances;

d) applying a subset of the stored set of orthodontic appliances to the patient's teeth according to one of the first and second position models;

e) performing a finite element analysis based on the first position model, the second position model, and the applied subset of orthodontic appliances to produce finite element analysis data; and,

producing an output relative to the finite element analysis data.

90. (previously presented) The computer readable storage medium of claim 89 wherein the producing of an output relative to the finite element analysis data comprises displaying the finite element analysis data.

91. (previously presented) The computer readable storage medium of claim 90 wherein the finite element analysis data comprises stresses, strains, forces, and/or moments resulting from the applied set of orthodontic appliances.

92. (previously presented) The computer readable storage medium of claim 89 wherein the storing of a first position model comprises displaying upper and lower arches of the patient.

93. (previously presented) The computer readable storage medium of claim 89 wherein the applying of the subset of orthodontic appliances comprises displaying the applied subset of orthodontic appliances on the patient's teeth.

94. (previously presented) The computer readable storage medium of claim 89 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth between the first and second positions as represented by the first and second position models.

95. (previously presented) The computer readable storage medium of claim 89 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a

movement of the patient's teeth from the second positions to the first positions as represented by the first and second position models.

96. (previously presented) The computer readable storage medium of claim 89 wherein the applying of the subset of orthodontic appliances comprises applying the subset of orthodontic appliances to the patient's teeth according to the second position model.

97. (previously presented) The computer readable storage medium of claim 89 wherein the performing of the finite element analysis comprises:

determining position vectors for each of the patient's teeth between the first and second positions as represented by the first and second position models; and,

performing the finite element analysis based on the applied set of orthodontic appliances and a movement of the patient's teeth along the position vectors.

98. (previously presented) The computer readable storage medium of claim 89 wherein the first position model represents original positions of the

patient's teeth, and wherein the second position model represents final positions of the patient's teeth.

99. (previously presented) The computer readable storage medium of claim 98 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the final positions to the original positions.

100. (previously presented) The computer readable storage medium of claim 89 wherein the first position model represents intermediate positions of the patient's teeth, and wherein the second position model represents final positions of the patient's teeth.

101. (previously presented) The computer readable storage medium of claim 100 wherein the performing of the finite element analysis comprises performing the finite element analysis based on a movement of the patient's teeth from the final positions to the intermediate positions.

102. (previously presented) The computer readable storage medium of claim 89 wherein the performing of the finite element analysis comprises:

storing material properties of the patient's teeth, PDL, and bone and of the proposed orthodontic treatment; and,

performing the finite element analysis based on the first position model, the second position model, the assigned material properties, and the applied subset of orthodontic appliances.

103. (currently amended) A computer implemented method of analyzing an orthodontic treatment comprising:

storing first positions of a patient's teeth in memory;

storing second positions of the patient's teeth in the memory, wherein the second positions comprise desired positions relative to the first positions;

performing a finite element analysis to determine orthodontic effects of the orthodontic treatment, wherein the finite element analysis is performed based on (i) contact pairs between orthodontic

appliances ~~and teeth~~ to be applied during the orthodontic treatment, and (ii) a movement of the patient's teeth between the first and second positions; and,

providing an output based on the orthodontic effects.

104. (previously presented) The computer implemented method of claim 60 further comprising defining the contact pairs prior to performing of the finite element analysis.

105. (previously presented) The computer implemented method of claim 103 wherein the performing of the finite element analysis comprises:

determining position vectors for each of the patient's teeth between the first and second positions; and,

performing the finite element analysis based on the orthodontic treatment and a movement of the patient's teeth along the position vectors.

106. (previously presented) The computer implemented method of claim 103 wherein the performing of the finite element analysis comprises:

storing material properties of the patient's teeth, PDL, and bone and of at least some of the appliances to be used during the proposed orthodontic treatment; and,

performing the finite element analysis based on the orthodontic treatment, the stored material properties, and a movement of the patient's teeth between the first and second positions.